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**Effective Date:** Summer 2007

**Course Description**

Prerequisite: A grade of "C" or better in MATH 0092, placement by ACT (see placement section of this catalog), or consent of the department. Functions and graphs; polynomial, rational, exponential, and logarithmic functions; equations; inequalities. A graphing calculator is required. (A grade of "C" or better is required to advance to any higher numbered math course.)

**Course Objectives**

Students will:

1. Understand the fundamentals of college algebra as presented in the topical outline.
2. Develop critical thinking and problem solving skills.
3. Learn how to use the TI 83/84 Plus calculator to solve a variety of problems.\*

**Procedures to Evaluate these Objectives**

1. In-class problems after concept presentation
2. In-class exams
3. Cumulative final exam

**Use of Results of Evaluation to Improve the Course**

1. Student responses to in-class problems will be used to immediately help clarify any misunderstandings and to later adjust the appropriate course material.
2. All exams will be graded and examined to determine areas of teaching which could use improvement.
3. All evaluation methods will be used to determine the efficacy of the material presentation.

**Detailed Topical Outline**

1. Distance and midpoint formulas, equations of circles
2. Functions and their graphs
  - a. Identifying Functions, Functional Notation and Domains of Functions
  - b. Slopes and Intercepts of Lines
  - c. Horizontal and Vertical Lines
  - d. Parallel and Perpendicular Lines
  - e. Finding Equations of Lines
  - f. Graphs of Linear, Quadratic and Absolute Value Functions
  - g. Combinations and Composition of Functions
  - h. Definition of Inverse Functions and Finding Inverses of Linear Functions
  - i. \*Interpreting Graphs of Functions (increasing, decreasing, max and min)

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3. Solving Equations and Inequalities
    - a. \*Solving Equations Graphically
    - b. Simplifying Complex Numbers and Expressions involving Complex Numbers
    - c. Solving Linear, Absolute Value and Radical Equations Algebraically
    - d. Solving Quadratic Equations by factoring, by using the Square Root Property, and by using the Quadratic Formula
    - f. Applications of Linear and Quadratic Equations
    - g. \*Solving Linear, Quadratic, Absolute Value, and Polynomial Inequalities Algebraically and Graphically using Interval Notation
  4. Polynomial and Rational Functions
    - a. \*Characteristics of Graphs of Polynomials and Rational Functions
    - b. Rational Zeros Test
    - c. The Fundamental Theorem of Algebra
    - d. Conjugate Pair and Factor Theorem
    - e. \*Finding Zeros of Polynomials Graphically and by Synthetic Division
    - f. Finding Asymptotes of Rational Functions
  5. Exponential and Logarithmic Functions
    - a. Exponential Functions, Natural Exponential Functions and Functional Notation using Exponential Functions
    - b. Graphing Exponential Functions
    - c. Compound Interest Problems
    - d. Solving Exponential Equations using Common Bases.
    - e. Logarithmic Functions, Natural and Common Logarithms, Change of Base Formula, Evaluating Logarithms, and Functional Notation using Logarithmic Functions.
    - f. Graphs of Logarithmic Functions
    - g. Solving Exponential Equations using Logarithms
  6. Linear and Nonlinear Systems of Equations
    - a. \*Solving Systems in two variables Graphically
    - b. Solving Systems in two variables by Substitution and by Elimination
    - c. Applications of Systems of Equations